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THE GENUS *Dictya* MEIGEN (TETANOCERIDÆ, DIPTERA)

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In the two revisions of the American species belonging to the family Tetanoceridæ the only species of *Dictya* included is *umbrarum* Linnæus, a European species. Being aware of the existence in North America of more than one species of *Dictya*, I asked Mr. Colbran J. Wainwright if he could let me have specimens of *umbrarum* and he very kindly sent three of them.

Since all the known species of *Dictya* bear a very close resemblance to each other, their separation by other than genitalic characters is almost impossible. Fortunately, both sexes display good genitalic characters and in the case of the females no preparation of the specimens is necessary. With the males it is only necessary to relax them and spread the genitalia.

In the illustrations prepared for this paper all the figures of the parts of the male genitalia are drawn from lateral view, all are drawn to the same scale, and I have illustrated only those parts by which the species may be most easily identified. In all cases where an interpretation of genitalic figures is being made it must be remembered that a slight alteration in the angle from which the object is viewed will usually give a different appearance. In the case of the present figures I have drawn them so that the greatest width of the anterior clasper is shown and have made, at most, slight changes in the apical portion (as seen from this view), in order to bring out the characteristic shape. In the present case also I do not believe that the shape of the whitish, anterior appendage on the anterior clasper is of much diagnostic importance, since it is so easily damaged in spreading the genitalia, although it is probable that in specimens prepared by removing the abdomen, and following the usual procedure in preparing slides, another excellent character for the separation of the species would be available.

In the present case I have made use of only the anterior and posterior claspers in the male and of the eighth sternite in the female. In most of the species the posterior claspers are very similarly shaped and show only minor variation in this respect, and since the posterior lobe is rather

soft, too much reliance must not be placed upon its shape. The anterior or inner claspers give the best and most easily available characters and a single glance is usually sufficient to identify the species. Whether the outer forceps or "auxilliary lobe" presents reliable characters or not is open to question, since these organs are thin and may be more or less curved. I suspect that they show much more variation than the other parts. The penis also exhibits distinct differences, but, since it is usually concealed by the claspers, it is not readily available for taxonomic study. The posterior forceps also are concealed, and I have made no attempt to study them.

The figures of the eighth sternite must not be interpreted along too strict lines, as each specimen shows slight differences due to drying. In order to secure the exact shape of this it is necessary to treat with caustic and remove all adjacent parts. I have drawn what I believe to be the typical structure of this sternite in each of the species but I must point out that I have no proof, other than the locality, size and minor color characters, that the females are properly associated with the males.

The following is the synonymy of the genus.

DICTYA Meigen

MEIGEN, 1803, 'Illiger's Mag.,' II, p. 277.

Monochætophora HENDEL, 1900, Verh. Zool.-bot. Ges., Wien, L, p. 355.

Monochætophora CRESSON, 1920, Trans. Amer. Ent. Soc., XLVI, p. 68.

Dictya MELANDER, 1920, Ann. Ent. Soc. Amer., XIII, p. 322.

The genotype is *Musca umbrarum* Linnæus, the only recognized palæarctic species.

Dictya may be readily distinguished from other Tetanoceridæ by the following characters: clypeus not prominent; propleural bristle absent; scutellum with four bristles; mesopleura and pteropleura each with a strong bristle and the absence of sternopleural bristles.

TABLE OF SPECIES

Since all the species in this genus are so similar in appearance and are only to be recognized by genitalic characters I present only a key to the males. The females may be determined by association with the males and by consulting the figures.

- 1.—Posterior claspers with a distinct lobe below which bears dense bristly hairs apically (Fig. 12).....*borealis*, n. sp.
Posterior claspers with a preapical emargination and with much shorter, never caudally directed hairs on the lower part.....2.
- 2.—Apex of the inner claspers strongly produced anteriorly and posteriorly (Fig. 5).
pictipes Loew.

- Apex of inner claspers never strongly produced posteriorly.....3.
 3.—Apical portion of the inner claspers tapering and produced anteriorly.....4.
 Apical portion of inner claspers never conspicuously tapering nor curved
 anteriorly.....5.
 4.—Anterior claspers broad, not regularly tapering (Fig. 1).....*umbrarum* Linnæus.
 Anterior claspers narrow and regularly tapering (Fig. 3).....*umbroides*, n. sp.
 5.—Apical portion of the anterior clasper with a long anterior process (Fig. 9).
 lobifera, n. sp.
 Apical portion of anterior clasper at most weakly produced beyond a deep
 emargination.....6.
 6.—Anterior clasper broad and with a deep anterior margination (Fig. 11).
 incisa, n. sp.
 Anterior clasper with the apical half narrow and much more weakly emarginate
 in front (Fig. 7).....*texensis*, n. sp.

Dictya umbrarum Linnæus

Figures 1 and 2

Musca umbrarum LINNÆUS, 1761, 'Fauna Suec.', p. 1864.

MEIGEN, 1803, 'Illiger's Mag.', II, p. 277.

Pherbina paludosa DESVOIDY, 1830, Mem. Acad. Roy. Sci. Inst. France, II, p. 691.

For complete synonymy of *umbrarum* see 'Kat. Pal. Dipt.', IV, p. 65.

The following description applies quite well to all the species.

MALE.—Length, 4 to 6 mm. Face moderately retreating, perpendicular on the lowest third, the median third gently convex longitudinally, the parafacials also more or less convex toward the eyes. Face and cheeks white, the latter with a large brownish spot in front. Front dull honey-yellow, the orbits very narrowly white; two large brown spots, each hair arising from a small spot; ocellar triangle dull yellowish brown. Occiput whitish, each hair arising from brown spot. One parafrontal bristle, the verticals, outer verticals and postverticals strong. Cheeks one-third as wide as the eye-height. Palpi yellow. Antennæ reddish; second segment scarcely longer than wide, third somewhat longer than the second, concave above, the apex obtuse; arista with sparse, long black rays.

Thorax cinereous pollinose, the mesonotum with about four rows of irregular brown blotches, and often with many of the hairs arising from brownish spots; pleura usually with more or less conspicuous brown areas. Two pairs of dorsocentrals; two pairs of scutellars, the disc setulose; pleura setulose, the mesopleura with a bristle above posteriorly, the pteropleura with one in the middle.

Legs reddish yellow, the femora with two broad, more or less entire, brown bands on the apical half; tibiæ brown apically; tarsi with the apical two or three segments brown, the basal segment more or less brown.

Wings about equally brownish and cinereous hyaline on the anterior half, and grayish and hyaline on the posterior half, the clear spots more or less rectangular on the anterior half of the wing and more rounded on the posterior half. The intensity of the color varies and the wing may be mostly brown although it is always paler behind and deeper in color along the costa. In some specimens the clear color predominates.

Abdomen mostly brownish but with extensive cinereous white areas.

This is the only recognized palæarctic species, but in view of the fact that there are several American species it would not be surprising to find that more than one form has been confused under this name. The species has a wide range in Europe, according to the records, but the question of even varietal differences has never been raised. It is readily distinguished from *umbroides* by the shape of the anterior claspers of the male and the presence of setulæ on the median portion of the eighth sternite in the female.

Two males and one female, Staateidiger, near Meiningen, Germany, August 15, 1907, ex collection Girschner, received from Mr. Colbran J. Wainwright.

In addition to the European specimens there are three specimens from Monterey, California, July 13, 18 and 22, 1896 (Wheeler Collection), which show no genitalic differences in either sex except that the anterior claspers are more evenly tapering and do not display the irregularity shown in the figure. The male is 5.5 mm., the females 6 mm. in length. Notwithstanding the difference in size I believe that they represent the true *umbrarum*. However, a thorough study of the entire genitalia may provide tangible differences, but my material is too scanty to permit such a comparison.

***Dictya umbroides*, new species**

Figures 3 and 4

Very similar to *umbrarum* Linnæus from which it is distinguished only by genitalic characters. In the male the anterior claspers are rather evenly tapering on the apical portion and form a long hook, while in the female the median portion of the eighth sternite is bare or has only one or two setulæ.

Types.—Holotype, male, and allotype, female, Banff, Alberta, Canada, June 1, 1922. Paratypes: male, Banff, June 1, four females, Banff, May 5 and June 18, 23 and 29, 1922, all collected by C. B. D. Garrett; male, Glen Souris, Manitoba, August 23, 1923 (H. A. Robertson); female, Aweme, Manitoba, August 15, 1923 (N. Criddle). The types are in the Canadian National Collection, paratypes in The American Museum of Natural History.

***Dictya pictipes* Loew**

Figures 5 and 6

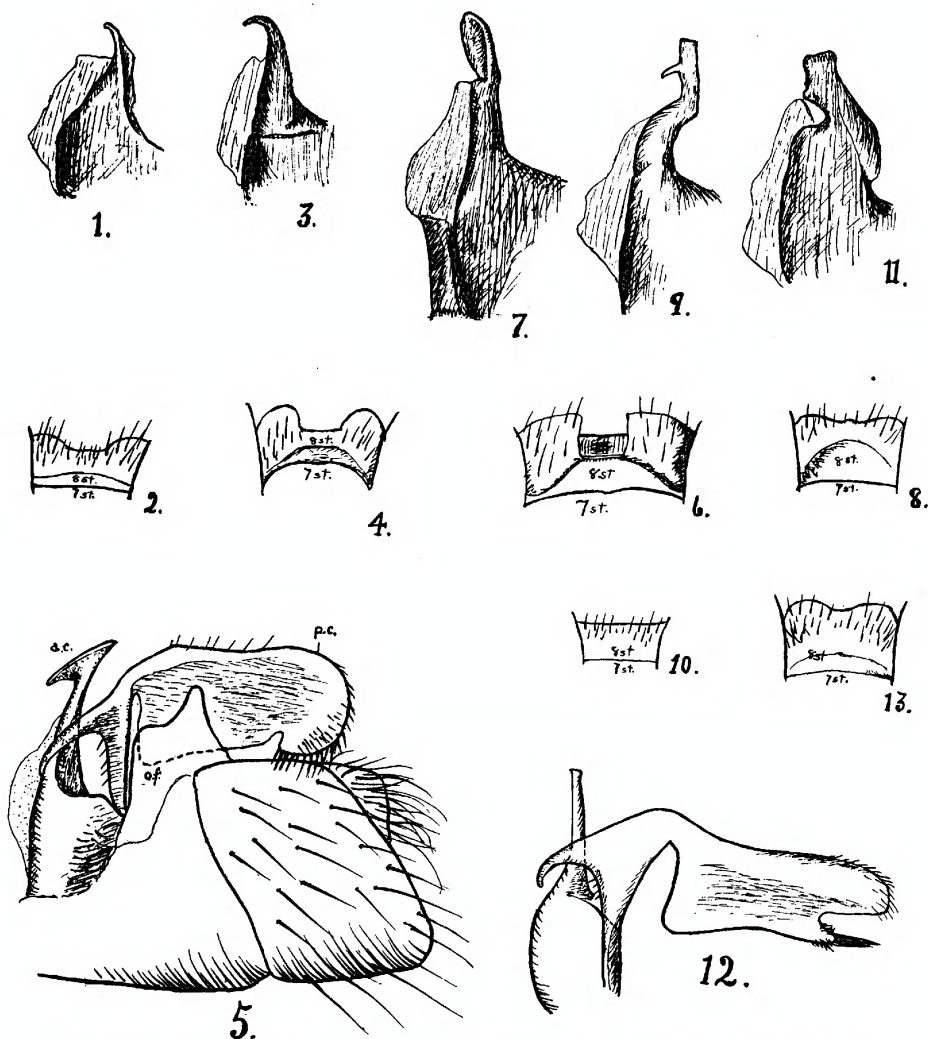
Tetanocera pictipes LOEW, 1859, Wien. Ent. Monatschr., III, p. 292.

Tetanocera pictipes LOEW, 1862, 'Mon. N. A. Dipt.,' I, p. 111.

Monochætophora umbrarum CRESSON, 1920, Trans. Amer. Ent. Soc., XLVI, p. 70.

Dictya umbrarum MELANDER, 1920, Ann. Ent. Soc. Amer., XIII, p. 322.

An easily recognized species in both sexes. In the male the anterior claspers are characteristically produced apically and in the female the



- Fig. 1. *Dictya umbrarum* Linnæus, lateral view of anterior clasper of male.
 Fig. 2. *Dictya umbrarum* Linnæus, ventral view of eighth sternite of female.
 Fig. 3. *Dictya umbroides*, new species, lateral view of anterior clasper of male.
 Fig. 4. *Dictya umbroides*, new species, ventral view of eighth sternite of female.
 Fig. 5. *Dictya pictipes* Loew, lateral view of male genitalia showing claspers and outer forceps.
 a.c., anterior claspers; p.c., posterior claspers; o.f., outer forceps.
 Fig. 6. *Dictya pictipes* Loew, ventral view of eighth sternite of female.
 Fig. 7. *Dictya texensis*, new species, lateral view of anterior clasper of male.
 Fig. 8. *Dictya texensis*, new species, ventral view of eighth sternite of female.
 Fig. 9. *Dictya lobifera*, new species, lateral view of anterior clasper of male.
 Fig. 10. *Dictya lobifera*, new species, ventral view of eighth sternite of female.
 Fig. 11. *Dictya incisa*, new species, lateral view of anterior clasper of male.
 Fig. 12. *Dictya borealis*, new species, lateral view of anterior and posterior claspers of male.
 Fig. 13. *Dictya borealis*, new species, ventral view of eighth sternite of female.

eighth sternite is deeply excavated. There is some variation in the width and depth of the excavation of the sternite, but this is all within a moderately narrow range and may be largely due to drying.

D. pictipes has a wide distribution. In the north the species ranges from Nova Scotia to Saskatchewan and Wyoming and south to Texas. It was originally described from Washington, D. C., and the Museum collection contains one of the original lot collected by Osten Sacken.

***Dictya texensis*, new species**

Figures 7 and 8

The genitalia of both sexes show characteristic differences. While the apical portion of the anterior clasper is distinctly notched near the middle, there is no deep emargination such as occurs in *incisa*, new species. This form is apparently intermediate between the species with the curved claspers and those which have parallel sides or are more or less clubbed apically. The eighth sternite of the female is gently emarginate apically and bears a small median convexity.

Types.—Holotype, male, Austin, Texas, February 22, 1900, and allotype, female, Austin, October 7, 1899 (Wheeler Collection). Paratypes, male, Austin, February 22, 1900 (Wheeler Collection), and female, Morgan, New Jersey, August 7 (Weiss and West).

***Dictya lobifera*, new species**

Figures 9 and 10

The male may be readily distinguished by the presence of the narrow lobe on the anterior surface of the anterior claspers.

Types.—Holotype, male, Ormond, Florida (Slosson Collection); allotype, female, Lake Worth, Florida (Slosson Collection). Paratypes, female, Biscayne Bay, Florida (Slosson Collection); female, Salt Meadows, New Jersey, July (A. J. Weldt); female, Orange Mts., New Jersey, July (A. J. Weldt); female, Cerro Cabras, near Puerto del Rio, Cuba, September 11, 1913. Paratypes in the Canadian National Collection.

***Dictya incisa*, new species**

Figure 11

The broad, broadly excised anterior claspers render the male easily identifiable. In the presence of the posterior depressed portion *incisa* apparently shows a relationship to *umbrarum* Linnæus. The blunt apex is usually wide but from most views appears narrower than shown in the figure.

Types.—Holotype, male, and paratype, male, G. Zuni River, Arizona, July 27 (Wheeler Collection).

***Dictya borealis*, new species**

Figures 12 and 13

The male of this species can usually be recognized without spreading the genitalia, as the apical part of the posterior clasper is normally visible and its shape is

characteristic. In the female the eighth sternite is rather shallowly emarginate in the middle. The length varies from 5 to 6.25 mm.

TYPES.—Holotype, male, Birtle, Manitoba, August 3, 1928 (R. D. Bird); allotype, female "Wisconsin" (Wheeler Collection). Paratypes: male, Glen Souris, Manitoba, September 3, 1923 (H. A. Robertson); male and female, Maryfield, Saskatchewan, August 31, 1916 (N. Criddle); female, Bottineau, N. D., August 22, 1923 (H. A. Robertson); female, Saskatoon, Saskatchewan, June 5, 1922 (N. J. Atkinson); female, Strathclair, Manitoba, August 5, 1923 (H. A. Robertson); female, Port Hope, Ontario (W. Metcalfe). Paratypes in the Canadian National Collection.

